XXXII.—*On the Occurrence of the Bottle-headed Whale,* Hyperoodon bidens, *Flem., and Remarks thereon.* By William Thompson, Esq.

I have lately had an opportunity of carefully examining two specimens of the Bottle-headed Whale, an old female and a young female, and now forward you a copy of my notes made on the spot. The only work on the British Cetacea to which I have access is that by Professor Bell on the British Mammalia, which includes the Cetacea. In that work I find that the occurrence of the Bottle-head on the English coast is very rare, and British naturalists are enjoined to be very careful in examining any specimens they may have the good fortune to meet with. The pleasant task has fallen to my lot, and I trust the trouble I have taken and the accuracy of my measurements will leave nothing to be wished for on this point. I first carefully measured the larger of the two, and the following results I confidently offer to the notice of naturalists. The whole of the measurements were taken with a tape, and also a two-foot rule. In all cases, unless otherwise particularly mentioned, the measurements were taken from point to point; for instance, in computing the distance from the snout to the blowhole, the tape was drawn from one point to the other, and was not laid along the facial angle. With these remarks I lay before you the measurements.

	ft.	in.
Extreme length from the end of the snout to the fork of the caudal	24	0
Length of the tips of the caudal beyond the fork	0	8
(Thus making the length 24 ft. 8 inches.)		
Length from the end of the snout to the eye	3	10
Length from the end of the snout to the pectoral	6	2
Length from the end of the snout to the dorsal	14	6
Length from the end of the snout and following the line of the belly to the vulva	16	4
Length from caudal to the back edge of the dorsal	7	5
Length from caudal to the vulva	7	6
Length of upper mandible from the tip of the snout to the angle of the mouth	2	4
Length of under mandible from the tip of the snout to the angle of the mouth	2	6
Length of blowhole from tip to tip	0	6
Distance of blowhole from the tip of the snout	4	10
Extent of caudal from tip to tip	6	0
Length of dorsal at its base	1	11
Height of dorsal along its front edge	1	11
Height of dorsal at its back edge	1	2
Length of pectoral, including the portion that is not free	2	10
Breadth of pectoral in its widest part	0	10
(The widest part is 1 ft. 4 in. from the tip of the fin.)		
Length of vulva	2	0

	ft.	in.
Length of eye-opening	0	2
Width of eye-opening	0	$0\frac{3}{4}$
Distance from eye to ear	0	$7\frac{7}{8}$
Depth of the mandibles at the base	0	9
Depth of forehead	1	9
Height of head	2	8
Width of palate	0	5
Width of lower mandible	0	5
Circumference of upper mandible	1	6
Circumference of lower mandible	1	8
Circumference of body at the pectoral	11	10
Circumference in front of the dorsal	11	4
Circumference behind the dorsal	9	10
Circumference at base of the caudal	3	2
The greatest circumference, which was exactly 9 ft. 3 in. from the tip of the snout	13	8

The measurements are very numerous, but I was most anxious to leave nothing undone or in doubt.

In the specimen I am now describing, which is the larger of the two, the forehead is very high and more perpendicular than in Mr. Bell's figure in the 'British Mammalia,' but which otherwise gives a very good idea of the animal; it reminded me of that part in a King Charles's spaniel. The snout was 14 inches in length, rounded at the end; the sides of it were appressed. The palate, as well as the surface of the lower jaw, were crowded with small tubercles, which, as well as the whole of that portion, were extremely hard to the touch; but as the animals were caught the day previous to that on which I examined them, the hardness might have partly arisen from their having become dry: I could not detect anything that would induce me to suppose them to be rudimentary vestiges of whalebone. I sought carefully for teeth, but could find none whatever, neither could I feel any in the gums; they were in fact wanting. Under the lower jaw, the position of the inferior maxillæ is marked by a suture running their whole length and united together at the chin. The tongue was very large, short, and rounded, and reaches to within 13 inches from the tip of the snout; it appears to be a bag of skin, containing blubber and not flesh, and was of a purplish colour. The blowhole is in the shape of a crescent *with the horns turned forwards*, and not backwards as stated in Bell and Jenyns; the orifice is covered with a skin valve. The dorsal, which is very small for the size of the animal, and which can be of but little if any use, is placed considerably nearer the tail than the head; it inclines backwards at an acute angle, and has its posterior edge (which is on a line with the centre of the vulva) much hollowed out. The body for the distance of about 4 feet from the base of the caudal is compressed at the sides, and runs off to a keel on both back and

belly. The caudal, which as in all whales is placed horizontally, is not hollowed out to any great extent: by means of a line stretched from tip to tip, I found that in the middle it was hollowed out to the depth of 8 inches. The pectorals are also very small and terminate in an acute angle; they are placed on a line with the under side of the mandibles, and are 3 feet apart; the length of the free portion is about 18 inches. The vulva and the anus are *externally* apparently in one, but in the calf they are quite distinct. The mammæ were small, and measured longitudinally 3 inches; in the middle of each was a hole in which you could insert a finger; they were very short, not half an inch in length, and appeared composed of wrinkled skin; they were placed one on each side of, and in immediate proximity to, the anus. That portion of the vulva which was exposed to view measured 2 feet in length, and was composed of soft wrinkled skin, very baggy and of a deep lead-colour. Milk was oozing from the teats, from which we may infer that the calf was not completely weaned; the milk was creamy and yellowish, apparently very rich. The belly was blackish-gray, deepening to half-way up each side; the remainder of the body was of a dark brown, nearly black; the head and snout are of a much lighter brown than the rest of the body, and have a yellowish tinge. The eye, which is small in comparison with the size of the animal, is of the same size as in the young one. At the base of the snout and of the forehead I noticed some extraordinary markings. The marks consisted of several circles about half an inch in diameter; on the outside these circles were placed most irregularly, some being an inch apart, and others being clustered together and overlying each other. Each circle was composed of eight or ten small circles about the size of a pin's head: the regularity displayed in each circle was such, that at the first glance it appeared as if they had all been made by one and the same stamp; on consideration it struck me that the marks might have been caused by the whale louse, one of which I found on the younger whale.

The whale calf measured 16 ft. 8 in. in length; from tip of snout to eye 2 ft. 6 in.; snout to blowhole 2 ft. 10 in.; snout to blowhole, measured along the curve of the forehead, 2 ft. 11½ in.; blowhole to dorsal 7 ft. 8 in.; the attached end of the pectorals are 1 ft. 7 in. apart; length of vulva 8 in.; distance from vulva to anus 8½ in. No appearance of mammæ. The eye is the same size as in the old whale. The snout is shorter in proportion, and the body darker. The whales had unfortunately been kept too long before they were cut up; one in fact burst, from the quantity of gas that had accumulated, and this was rendered worse in consequence of its not having been bled. The flesh was of

a deep red, nearly black, but as it had not been bled, this might have made some difference. The intestines I did not see, but was informed they were not of very great bulk and scarcely filled a wheelbarrow. The blubber laid the thickest at the middle of the body, where it was 3 inches in depth. The forehead under the layer of blubber consisted of a fatty substance very rich in oil; from it ran a large quantity of pure and limpid oil. A quantity of oil ran from the mouth, and falling on the ground coagulated, and had the appearance of salad oil in a frozen state.

They were both caught on the 2nd of October, having run ashore within a few hundred yards of each other in Portland Roads; the calf was first secured.

Weymouth, Oct. 13, 1854.

XXXIII.—*On the Primitive Diversity and Number of Animals in Geological Times.* By L. Agassiz*.

There is a view generally entertained by naturalists and geologists, that genera and species of animals and plants are far more numerous in the present age of the world than at any previous geological period. This seems to me an entire misconception of the character and diversity of the fossils which have been discovered in the different geological formations, and to rest upon estimates which are not made within the same limits and with the same standard. Whenever a comparison of the diversity and number of fossils of any geological period has been made with those of the living animals and plants belonging to the same classes and families, it has been done under the tacit assumption, which seems to me entirely unjustifiable, that the fossils formerly inhabiting our globe are known to the same extent as the animals which live at present upon its surface; while it should be well understood, that however accurate our knowledge of fossils may be, it has been restricted, for each geological formation, to a few circumscribed areas. Comparisons of fossil with living animals ought, therefore, to be limited to geographical districts corresponding in extent to those in which the fossils occur; or, more properly, a fossil fauna with all its local peculiarities ought to be compared with a *corresponding* fauna of the present period, and not with *all* the animals of the same class living at present *upon the whole surface* of the globe. And when this is done with sufficient care, and proper allowance is made for the limited time during which investigations of fossils have been carried on com-

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